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Filed : January 16, 2004

REMARKS

Claims 1, 11, and 40-43 are pending. Claim 1 has been amended. Support for Claim 1 can be found in the specification and claims as originally filed, for example, Claim 1. "New" Claims 40-43 are identical to previously pending Claims 2-5, which were cancelled in the previous Response in order to pursue apparatus claims. As the apparatus claims have been restricted out, Applicants have merely reintroduced dependent method claims. As these claims depend from Claim 1, and have previously been examined, an additional search will not be required for their review. Claims 23-39 have been cancelled in light of the Examiner's restriction of the claims. This cancellation of the claims is not a surrender of the relevant subject matter and Applicants reserve the right to pursue the cancelled material at a later point in time.

Applicants thank the Examiner for withdrawing the objections to the drawings and the rejection under 35 U.S.C. §112, first paragraph.

Rejection of Claims 1, 11, and 40-43.

The Examiner has rejected Claims 1 and 11 under 35 U.S.C. §103(a) as being unpatentable over Fong et al. (U.S. Pat. No. 5,812,403, "Fong") in view of Smith et al. (U.S. Pat. No. 6,150,628, "Smith"). The Examiner has asserted that Fong teaches, among other elements, 1) the use of a gate valve, and 2) embodiments in which a gate valve is not used. From these alternative embodiments, the Examiner concludes that Fong "motivates the skilled in the art to operate the gate valve to completely open the fluid passage by indicating that plasma radicals may flow through the fluid passage directly into the CVD reaction chamber..." (pages 3 and 4 of the Office Action). Additionally, the Examiner has asserted various statements regarding the Applicants' supplied references concerning the prior teachings in the art. Applicants respectfully traverse.

The cited references do not teach all of the claimed elements.

As an initial point, Applicants note that none of the asserted references teach a valve (or method) that can be opened such that the valve body is completely withdrawn from the path to form an opening substantially as wide as internal surfaces of the piping. Fong does not describe the nature of his valve 280 in any detail, and the only view of the valve 280 showing its relation

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to the inner surfaces of the pipe is schematic (see Figure 3). Indeed, the specification explicitly notes that the valve plug, corresponding to Claim 1's valve body, itself is not actually shown in the specification, "[g]ate valve 280 includes a valve plug (not shown) seated within the passage 293 for selectively allowing or preventing gases from passing through conduit 47 into gas mixing box 273." (emphasis added, col. 26, lines 49-52). Clearly, Fong fails to teach or suggest a valve body that withdraws completely to form an opening as wide as internal surfaces of the piping. In light of this lack of teaching, Fong cannot teach each of the presently claimed elements. Thus, a *prima facie* case of obviousness has not been established. We next address the question of whether some modification of Fong could supply this missing element.

Fong does not motivate one to combine the two different embodiments in Fong.

Recognizing that Fong does not teach each claimed element, the Examiner has asserted that two alternative embodiments in Fong (the first uses a valve and the second does not use a valve) could be combined so as to result in a valve (and method of use) in which a valve body is completely removed from the path. However, neither the references nor the Examiner provide any reason for such combination. Applicants respectfully note that the assertion that one could combine the characteristics of one embodiment with the characteristics of another embodiment is merely impermissible hindsight or an "obvious to try" rationale on the part of the Examiner. Applicants respectfully remind the Examiner that neither of these arguments is sufficient to establish a *prima facie* case of obviousness. (See, *In re Gordon*, 733 F.2d 900, 902; "*Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000) (Court reversed obviousness rejection involving technologically simple concept because there was no finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention" (M.P.E.P., §2143.01(IV); M.P.E.P. § 2145(X)(A); & (B)).

As an initial point, Applicants note that Fong seems to consistently treat these as alternative embodiments rather than embodiments that can or should be combined in some manner (*e.g.*, col. 26, lines 22-25). Thus, the reference appears to suggest that one or the other should be selected. Additionally, there is no reason supplied in the reference (nor even the

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mention of the possibility) for why, or how, one could combine the two alternative embodiments in the present situation. Moreover, there is nothing to suggest that this particular combination (valve and no valve) should be combined so that a particular type of valve (one which involves a valve body that can be completely withdrawn from the path) should be created and then used at this location for this type of device or method.

There is nothing to suggest that there are any advantages to the second embodiment in Fong (no valve) apart from the inherent fact that you do not need a valve (which presumably saves on the cost or complexity of the device). Of course, this advantage would be defeated by including a separate valve. The reference provides no apparent advantage for using a valve body that completely withdraws from the piping path. Applicants respectfully remind the Examiner that in such a situation, there is no adequate motivation to make the particular modifications (M.P.E.P. §2143.01(V)).

Applicants note that the motivation supplied by the Examiner in the Office Action mischaracterizes Fong's teachings. The section cited by the Examiner (col. 37, lines 54-65) is not actually referring to an advantage of one embodiment over the other. The cited section states:

In embodiments using gate valve 280, only when chamber 15 is used for a wafer cleaning step or when a chamber cleaning is performed does gate valve 280 open, allowing plasma radicals to flow into fluid passage 293 of gas mixing box 273, as seen in FIG. 3. As mentioned above, in some embodiments gate valve 280 is not used at all. The plasma radicals then may flow through annular passage 295 and into chamber 15 via gas distribution plate 20.

This section merely notes that, for both embodiments, gas from box 273 can flow through annular passage 295 and into chamber 15 (See FIG. 3). This section does not provide any motivation for why the absence of a valve could be beneficial. In particular, there is no suggestion at all that, when a valve is employed, it should be one in which the valve body can be completely withdrawn from the path defined by the piping inner surfaces. Thus, this particular section would not motivate one to modify the reference so as to perform the presently claimed method.

Because no adequate motivation has been supplied as to why one would combine features of the two alternative embodiments in Fong, a *prima facie* case of obviousness has not been established.

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The art's use of flow restrictors taught away from the presently claimed embodiments.

As noted above, the asserted references contain no suggestion for the asserted combination. Not only has the Examiner failed to show a suggestion in the art, but he has also failed to consider teachings away.

As noted in the previous Response, the art in the field of remote plasma cleaning for CVD chambers generally taught away from the presently claimed combination. An example of such a reference is U.S. Pat. No. 5,788,778. The relevant art taught the use of various devices in the piping that restricted the flow of gas. These "flow restrictors" (*e.g.*, diffusion plates, valves, and filters) were routinely employed and in fact considered desirable in this technology. (*See* '778). In contrast, the present method employs a step that is counterintuitive when used in the standard systems previously available in the prior art. The present method removes/minimizes the influence that the valve has to act as a flow restrictor when the valve is open. Put simply, without the teachings of the present application, there would be little reason to use the presently claimed step of complete withdrawal in the methods generally taught in this field. We next address each of the Examiner's comments regarding the Applicant's previous remarks.

The Examiner has asserted that U.S. Pat. No. 5,788,778 was not used in the rejection of the previously presented claims. Applicants note that whether or not this reference was cited in the office action is irrelevant. The reference is evidence of the state of the art at the time of the filing of the present application and must be considered for its teachings. *See In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1532 (Fed. Cir. 1988) ("Evidence that supports, rather than negates, patentability must be fairly considered."). "The totality of the prior art must be considered, and proceeding contrary to accepted wisdom in the art is evidence of nonobviousness. *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986)." M.P.E.P. § 2145(X)(D)(3). Additionally, "all teachings in the prior art must be considered to the extent that they are in analogous arts. Where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991)." M.P.E.P. §2143.01(II).

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The reference (like the other references cited above and the references cited in the previous Response) teaches the use of a flow restrictor, which in turn, teaches away from the presently claimed method. As an additional example, Applicants note that U.S. Pat. No. 5,844,195 teaches the use of a filter 818 that can also restrict the flow of gas and act as a flow restrictor. Thus, with no valve in the recited location, these references added restrictions at the recited location. This is particularly relevant evidence that the skilled artisan, when employing a valve in this location, would not have sought a valve type in which the valve body could be completely withdrawn from the path, thus effectively removing restrictions. While the Examiner has provided no suggestion to avoid restrictions, Applicants have pointed to teachings in the art away from the avoidance of restrictions.

Additionally, the Examiner has asserted that “flow restriction,” or more accurately the absence thereof, was not recited in the rejected claims. This is beside the point. Claim 1 recites “withdrawing a valve body completely from a path to form an opening substantially as wide as internal surfaces of the piping.” The cited references fail to teach or suggest this recited feature and the prior references’ preference for flow restrictors is merely evidence of the art’s failure to suggest (and in fact teaches away from) such complete withdrawal of a valve body in the recited context.

Finally, Applicants note that the number of references that recite a valve, but not the particular type of valve (or step) claimed, emphasizes the point that, prior to the present disclosure, the type of valve employed for remote plasma cleaning of CVD chambers was not considered important. For example, U.S. Pat. No. 6,274,058 describes a remote plasma cleaning method involving multiple valves. However, it, like Fong, does not teach the presently claimed type of valve. The cited references only further support the fact that the Applicants were the first to appreciate the importance of this particular step (or valve), in this particular situation (separating a remote plasma cleaning chamber from a CVD chamber).

In light of the above cited references, those references cited in the previous Response, and the above remarks, Applicants submit that, at the time of filing, the art did not suggest a valve that would be completely removed from the piping, and in fact taught away from such a valve by emphasizing various forms of flow restrictors.

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In summary, not all of the elements have been taught and an adequate motivation for modifying the references has not been supplied. Moreover, the above arguments and submitted references clearly demonstrate that there would have been no motivation to perform the particular combination of presently claimed steps in light of the general teachings of the prior art. Indeed, at the time of filing, the art could be characterized as teaching away from the use of the presently claimed method.

Because Claims 11 and 40-43 depend from Claim 1, as well as reciting additional distinctive elements, they too are novel and nonobvious. For these reasons as well as for others, Applicants request that the rejection be withdrawn and the claims allowed

CONCLUSION

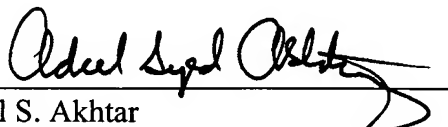
In view of the foregoing amendments and remarks, Applicants respectfully submit that the pending claims are in condition for allowance and request the same. If, however, some issue remains that the Examiner feels can be addressed by Examiner Amendment, the Examiner is cordially invited to call the undersigned for authorization.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: 
Adeel S. Akhtar
Registration No. 41,394
Attorney of Record
Customer No. 20,995
(415) 954-4114

2458580
031706